



Proposed Plan Public Meeting for the Matthiessen and Hegeler Zinc Company Superfund Site

**LaSalle, LaSalle County, Illinois
October 20, 2015**



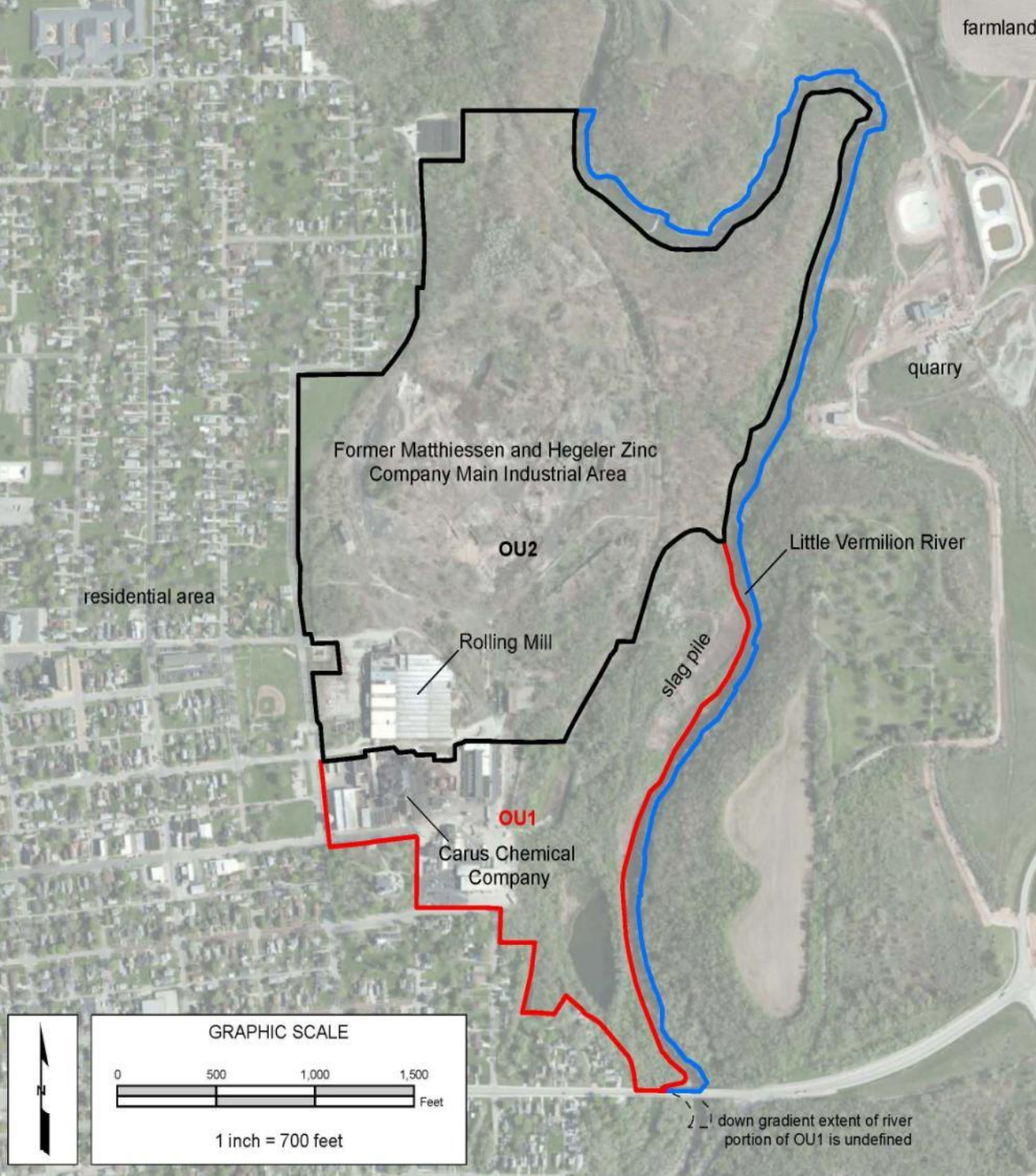
Introductions

- Demaree Collier - USEPA
- Teresa Jones - USEPA
- Mike Haggitt - Illinois EPA
- Scott Brockway, Eric Morton, Ray Mastrolonardo – USEPA Contractors



Agenda

- Presentation of proposed cleanup plan
 - Brief site history
 - Summary of contamination and site risks
 - Description of cleanup
- Questions and answers
- Formal public comment opportunity



OU1

1915 - present: Carus Chemical Company - production of potassium permanganate

OU2

1858 – 1961: Zinc smelting

1886 – 1978: Rolling Mill – zinc sheets

1950s - Ammonia Sulfate –fertilizer plant

1858 – 1937: Coal Mining

1858 – 1968: Sulfuric Acid Manufacturing

1980 – 2000: Rolling Mill – penny blanks for US Mint

2005 – 2008: Rolling Mill – Warehousing

Operable Unit Explanation



- Administrative Order on Consent for Remedial Investigation/Feasibility Study Signed with Carus Chemical (2006)
- Site divided into 2 Operable Units
 - OU1 – Carus Chemical Company – 47 acres
 - OU2 – USEPA Superfund – 180 acres and a large residential area



- OU Boundaries
- Little Vermilion River
- Approximate Northern Boundary of Slag Pile
- Site Buildings
- NPDES Non-Contact Cooling Water Ponds

Basemap Source:
USDA NAIP, 2007

Site Layout

Matthiessen and Hegeler Zinc Company Site
LaSalle, Illinois

Geosyntec
consultants



Figure
RA-1-2

ATLANTA, GA

June 2012



Superfund Process

- Remedial Investigation & Feasibility Study
- Proposed Plan ← M&H site
- Record of Decision
- Remedial Design
- Remedial Action
- Five Year Review

The M&H Site







OU1 Areas



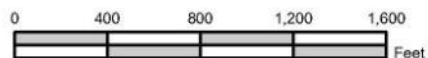
Risk Exposure Areas:

- Carus Plant Area (~18 acres)
- Slag Pile Area (~29 acres)
- Little Vermilion River

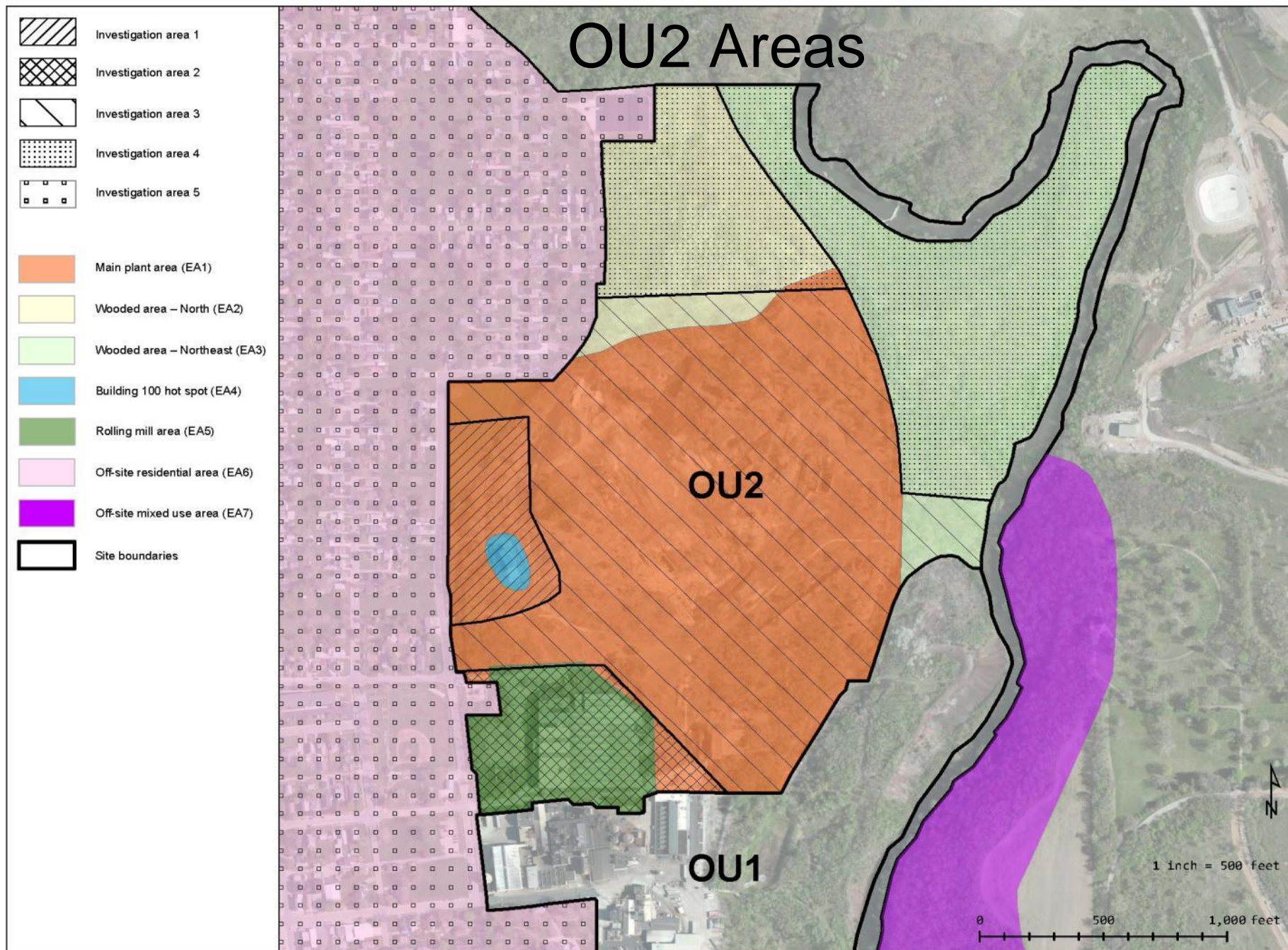
-  OU Boundaries
-  OU1 HHRA Exposure Areas
-  NPDES Non-Contact Cooling Water Ponds
-  Little Vermilion River



GRAPHIC SCALE



1 inch = 800 feet



Site Risks



OU1 – HHRA/ERA

- Carus Plant Area
- Slag Pile
- Little Vermilion River *

OU2 – HHRA/ERA

- Main Plant Area
- Wooded Area North
- Wooded Area Northeast *
- Building 100 Hotspot
- Rolling Mill Area
- Off-Site Residential Area
- Off-Site Mixed Use Area *
- Site-wide Groundwater

* Minimal or no risks found in these areas

OU1 and OU2 Contaminants of Concern



OU2

Building 100 Area – soil

- Metals, SVOCs, PCBs and asbestos

Rolling Mill Area – soil

- Metals, SVOCs and PCBs

Main Industrial Area – soil

- Metals, SVOCs, Pesticides, PCBs and Asbestos

North Area – soil

- Metals and SVOCs

Off-Site Residential Area - soil

- Metals

Groundwater

- Metals, SVOCs, VOCs and Pesticides

Surface Water

- Metals and Pesticides

OU1

Carus Plant Area – soil

- Metals and SVOCs

Slag Pile Area – soil

- Metals and SVOCs

Groundwater

- Metals

OU1 Human Health Risk Summary



Carus Plant Area - soil

- Cancer and non-cancer risks are within or below the acceptable risk range for worker scenarios
- Lead concentrations > 800 milligrams per kilogram (mg/kg) in 2 of 32 samples

Slag Pile Area - soil

- Cancer and non-cancer risks are within or below the acceptable risk range for worker scenarios
- Lead concentrations > 800 mg/kg in about half of samples

OU1 Summary – Little Vermilion River Baseline Ecological Risk Assessment (BERA) Results



Little Vermilion River

- Sediment and surface water within acceptable risk range for cancer and non-cancer
- Fish consumption cancer risks within or below acceptable risk range
- Some metals concentrations exceed generic sediment and surface water benchmarks but not significant
- Food web modeling indicated a limited potential for risks to mammals, but a marginal potential for risks to birds
- Toxicity testing did not find consistent differences between the Site Reaches and Reference Reach that could be attributed to the Site



OU2 Human Health Risk Summary



Building 100 Hotspot - soils

- Cancer risks for commercial/industrial worker
- Lead presents risk to workers and child recreationalist
- Asbestos risk to commercial/industrial worker only

Rolling Mill Area – soils

- Lead presents risk to workers and child recreationalist

Main Industrial Area - soils

- Cancer risks for utility worker
- Lead presents risk to all workers and child recreationalist
- Asbestos risk to commercial/industrial worker only

North Area - soils

- Lead presents risk to construction worker

OU2 Human Health Risk Summary



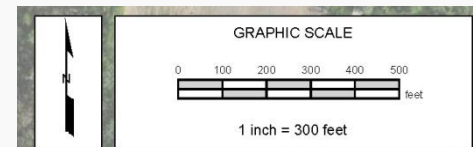
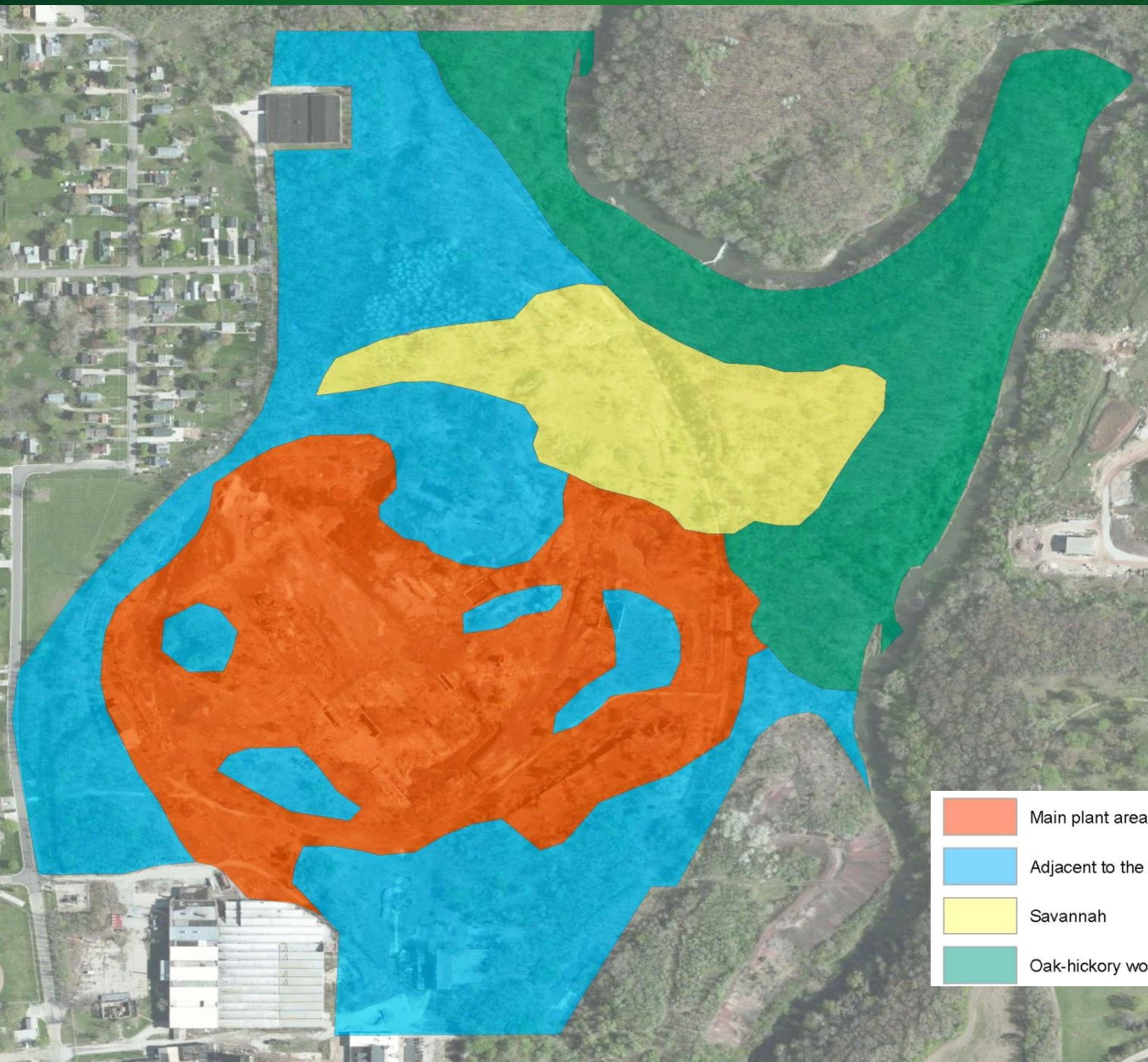
Off-Site Residential Area – soils

- Cancer risks for residents for arsenic at 26 of the 185 properties tested – These risks are at or exceed the high end of EPA's risk range and do require cleanup
- Non-cancer risks for construction worker and resident for antimony, arsenic, cadmium, manganese. Zinc for resident only
- Lead concentrations > 400 mg/kg at 46 of the 185 properties tested
- Lead at residences exceed 1,000 mg/kg at only 4 properties (highest lead concentration of 3,220 mg/kg).
- No samples collected indicate a high risk that requires immediate action

OU2 BERA Habitat Areas



Eco-risk in NE area is low and addressing may cause more harm than actual remediation



- Main plant area - highly disturbed (little or no vegetation)
- Adjacent to the main plant - disturbed with vegetation (woodland-grassland)
- Savannah
- Oak-hickory woodland

Groundwater at OU1 and OU2



- Classified by IEPA as Class II General Resource (i.e., non-potable) groundwater
- No groundwater supply wells at the Site
- Groundwater is not used for potable or industrial uses, including irrigation
- Agreement between the City and IEPA prohibits the drilling of water wells in City
- **CONCLUSION:** Groundwater does not pose a risk but will be monitored to ensure does not become a risk



AREAS REQUIRING REMEDIAL **ACTION**

OU1 Plant Area



OU1 – Main Plant Area Alternative



ALTERNATIVE 6 – SOIL COVER

Estimated Capital Cost: \$1,195,560

Estimated Construction Timeframe: 1 month

- Excavating approximately 4,600 cy of contaminated soil
- Installation of an engineered soil
- 18 inches of clean compacted fill with an additional 6 inches of gravel placed after subgrade excavation to acquire proper grade

OU1 Slag Pile Area



OU1 – Slag Pile Area Alternative



ALTERNATIVE 15 – SLOPING AND BENCHING + PLANTINGS + REVETMENTS AT THE TOE OF THE SLOPE + BMPs (includes the soil cover in Alternative 6)

Estimated Capital Cost: \$17,766,000

Estimated Construction Timeframe: 24 months (two seasons)

- Removal of the existing Slag Pile Area vegetation, and excavation, sloping, and benching of the slag pile along the Little Vermilion River
- A minimum 2-foot thick cover consisting of engineered compacted soil placed in a minimum of two compacted layers
- Best Management Practices (BMPs) will include soil cover seeding selected for growth over the soil-covered slag pile
- High density tree planting to stabilize slope



OU2 Consolidation Area

- Each of the Alternatives presented for OU2 involve excavating contaminated soil and placing on-site in the Main Industrial Area in a containment area where an engineered cap will then be placed over the soil

OU2 - Building 100 Area

Building 100 Area: IA1/EA4



OU2 Building 100 Area



OU2 – Building 100 Area – Alternative



Alternative 3 – Soil Excavation + On-Site Consolidation Under a Soil Cover

Estimated Capital Cost: \$3,200,000

Estimated Construction Timeframe: 4 months

- Approximately 34,000 cy of soil with concentrations above acceptable commercial/industrial human health risk levels will be excavated from the Building 100 Area and placed in the on-site consolidation area
- Excavated areas will be backfilled and plantings will be established

OU2 – Rolling Mill Area

Rolling Mill Area: IA2/EA5

area of main map

1 inch = 150 feet

0 250 500 feet



OU2 Rolling Mill Area



OU2 – Rolling Mill Area – Alternative



Alternative 3 – Soil Excavation + On-Site Consolidation Under a Soil Cover

Estimated Capital Cost: \$3,600,000

Estimated Construction Timeframe: 3 months

- Approximately 24,000 cy of soil with concentrations above acceptable commercial/industrial human health risk levels will be excavated from the Rolling Mill Area and placed within the on-site consolidation area
- Excavated areas will be backfilled and plantings will be established

OU2 –Main Industrial Area



OU2 Main Industrial Area



OU2 – Main Industrial Area - Alternative



Alternative 2 – Soil Excavation + On-Site Consolidation Under a Soil Cover

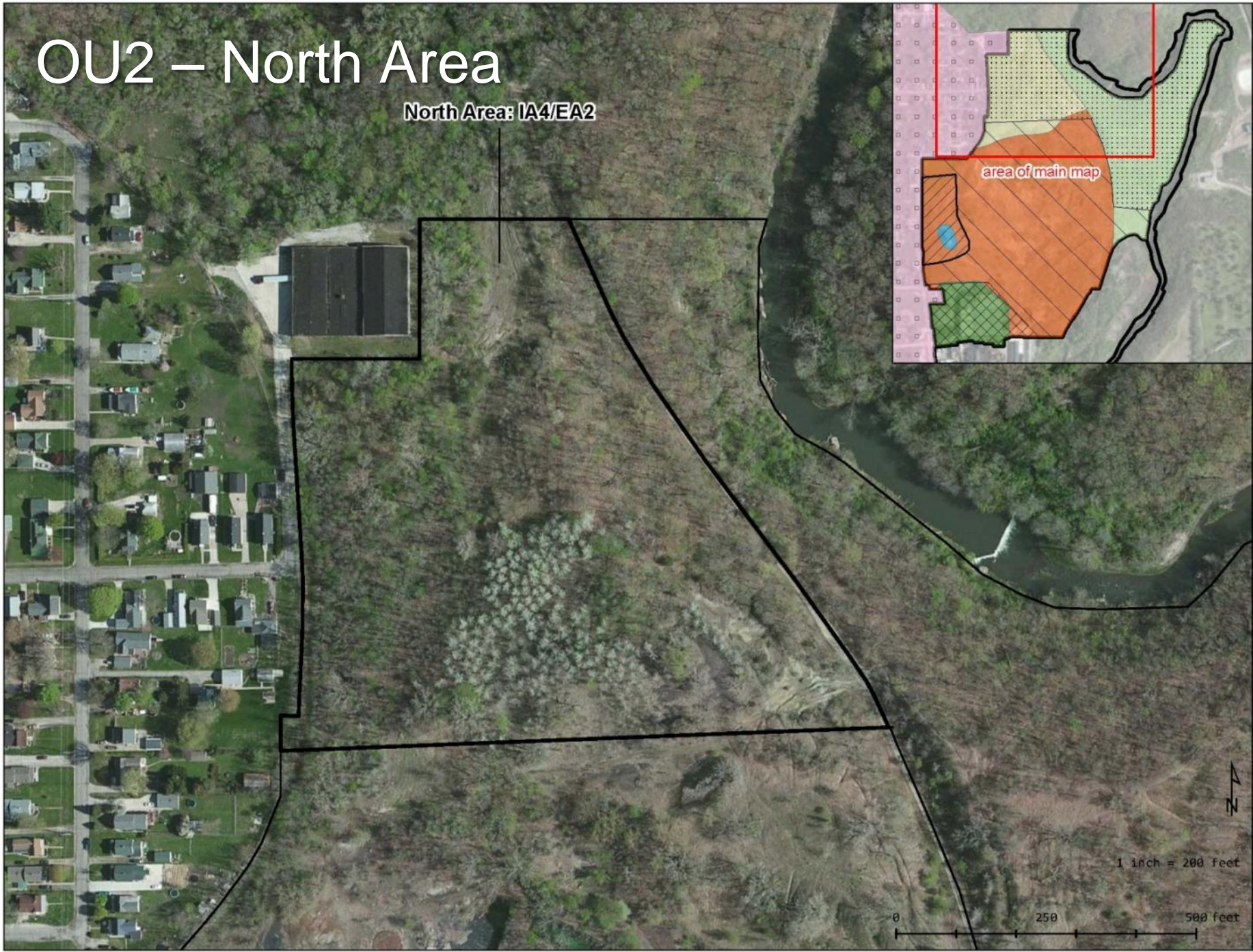
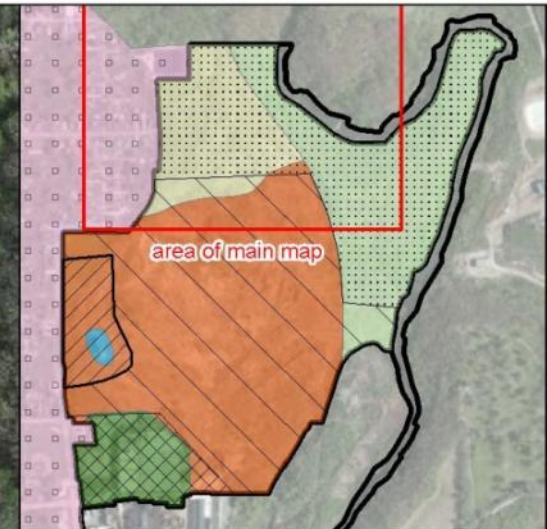
Estimated Capital Cost: \$33,400,900

Estimated Construction Timeframe: 26 months

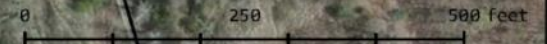
- Demolition of subsurface structures and obstructions
- Roughly 400,000 cy of contaminated material from the Main Industrial Area with concentrations above acceptable commercial/ industrial human health risk levels would be excavated and placed into the consolidation area.
- Approximately 950,000 cy of material will be transported from each of the contributing areas and placed into the consolidation area
- After consolidation, area will be covered 2 feet of compacted clay and one foot of topsoil and then vegetated

OU2 – North Area

North Area: IA4/EA2



1 inch = 200 feet



OU2 North Area



OU2 – North Area – Alternative



Alternative 4 – Soil Excavation + On-Site Consolidation Under a Soil Cover

Estimated Capital Cost: \$14,900,000

Estimated Construction Timeframe: 7 months

- Approximately 170,000 cy of soil with concentrations above acceptable commercial/industrial human health risk levels will be excavated from the North Area and placed in the on-site consolidation area
- Excavated areas will be backfilled and plantings will be established

Residential Area: IA5/EA6

OU2 – Residential Area

1 inch = 1,500 feet

0 0.5 1 mile



OU2 – Residential Area Alternative



Alternative 3 – Soil Excavation + On-Site Consolidation Under a Soil Cover

Estimated Capital Cost: \$112,147,700

Estimated Construction Timeframe: 177 months (about 15 years)

- ***Roughly 200 homes were sampled out of nearly 4,500 so costs and number of homes is estimated based on the 4% properties sampled – All homes will be sampled during Design phase to determine actual number of homes needing cleanup***
- Excavating contaminated soils and transporting the soils to the Main Industrial Area for consolidation in the on-site consolidation area under a soil cover
- EPA estimates that approximately 3,000 properties will require cleanup

OU2 – Residential Area Alternative



- Maximum excavation depth is estimated to be 24 inches, but could be less based on pre-design sample results
- It is estimated that close to 300,000 cy of material will be excavated from the residential area
- If contamination remains in place deeper than 24 inches, a visual barrier, such as orange construction fence or landscape fabric, will be placed on top of the contaminated soil and beneath the clean backfill soil

Proposed Soil Cleanup Goals for Residential Area



Arsenic = 18 mg/kg

Lead = 400 mg/kg

Levels established by calculation of safe levels of exposure



Arsenic

- Background arsenic is 11.8 parts per million (ppm)
- EPA evaluated cancer risks and non-cancer hazards from arsenic
- EPA determined that cleaning up to 18 ppm would be within acceptable risk range for arsenic and an Hazard Index=1



Lead

- Lead concentrations in soil are based upon protecting children from accumulating lead in the their bloodstream
- Among other things, lead affects neurological development
- Protects against a probability of children's Blood Lead Levels (BLLs) exceeding 10 micrograms per deciliter
- 400 mg/kg is protective



What are the risks to residences?

- No immediate health threats
- No threats to local ecology
- Potential contact with contaminated soil in yards
 - Accidentally getting contaminated soil in mouth
 - Breathing in contaminated dust
 - Getting contaminated soil on your skin



Residential Risk Continued

- Risk from getting soil on skin is low
- Even lower risk from breathing dust particles
- Risk from exposure is based on long-term exposure
- Homegrown produce – used raised beds to plant in yards

Example



South Minneapolis Residential Cleanup



Before



After

Example



Velsicol Chemical Corp. Residential Cleanup



Before



After

Questions and Answers



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